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| EXAMINER KAW SAR, ABDULLAH AL | | | | |
| ART UNIT 2195 | | PAPER NUMBER | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/784,065

Applicant(s)

MAGENHEIMER, DANIEL J.

Examiner

ABDULLAH AL KAWSAR

Art Unit

2195

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,8,9,11-20,22,24,25,27,29-31,33,35-37,39,40 and 42-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5 and 6 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,8,9,11-20,22,24,25,27,29-31,33,35-37,39,40 and 42-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1, 3-6, 8-9, 11-20, 22, 24-25, 27, 29-31, 33, 35-37, 39-40, 42-47 are pending.

Claim Objections

2. Claim 44 is objected to because of the following informalities:
- i. Claim 44, line 6 replace "runtine" with "runtime" end of the claim.
- Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 11-15, 17-18, 24-25, 27, 29-30, 35-36, 40 and 42-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silvester(Silvester) US Patent No. 7010634, in view of Kishi (Kishi) US Patent No. 5023771 and in view of Fish(Fish) US Patent No. 6199159.
5. Silvester was cited on PTO-892 mailed on 9/16/2009.
6. As per claim 1, Silvester teaches the invention substantially as claimed including a computer system comprising:

at least one processor (figure 2, element 200); and
a flexible operating system executable on the at least one processor to (col 4, lines 29-37);

determine whether said flexible operating system is being used as a native operating system (full mode) or as a different mode (mini mode) operating system (col 2, lines 22-33; col 4, lines 29-37);

Silvester does not specifically disclose determine whether said flexible operating system is being used as a native operating system or as a virtualized operating system on said computer system, wherein the determining is based on checking a variable set during a boot process of the computer system; and execute in a first manner as a native operating system on the computer system in response to detecting that said flexible operating system is being used as the native operating system, and execute in a second manner as a virtualized operating system on said computer system in response to detecting that said flexible operating system is being used as the virtualized operating system; wherein said flexible operating system is configured to operate in a non-virtualized environment when said native operating system is being used as the native operating system, and is configured to operate in a virtualized environment when said flexible operating system is being used as the virtualized operating system.

However Kishi teaches determine whether said flexible operating system is being used as a native operating system or as a virtualized operating system on said computer system, wherein the determining is based on checking a variable set of the computer system (abstract, lines 1-3); and

execute in a first manner as a native operating system on the computer system in response to detecting that said flexible operating system is being used as the native operating system, and execute in a second manner as a virtualized operating system on said computer system in response to detecting that said flexible operating system is being used as the virtualized operating system (col 1, lines 20-35);

wherein said flexible operating system is configured to operate in a non-virtualized environment when said native operating system is being used as the native operating system, and is configured to operate in a virtualized environment when said flexible operating system is being used as the virtualized operating system (col 3, lines 51-63)

7. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Kishi into the method of Silvester to have the operating system running in virtual mode. The modification would have been obvious because one of the ordinary skills of the art utilize the teaching of Kishi to have the operating system execute in virtual mode for servicing tasks that require virtual configuration.

Silvester and Kishi do not specifically disclose checking a variable set during a boot process of the computer system.

However Fish teaches checking a variable set during a boot process of the computer system (col 2, lines 64-67 through col 3, lines 1-5).

Art Unit: 2195

8. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Fish into the combined method of Silvester and Kishi to determining during boot-up process. The modification would have been obvious because one of the ordinary skills of the art utilize the value saved in VMCS in the processor as an identifier to determine the operating mode during boot-up process.

9. As per claim 11, Silvester teaches the invention substantially as claimed including a method comprising:

implementing at least one operating system on a computer system(col 4, lines 29-32);

determining, by said computer system, whether said at least one operating system is a native operating system(full mode) or a different mode(mini mode) operating system (col 2, lines 22-33; col 4, lines 29-37);

Silvester does not specifically disclose determining, by said computer system, whether said at least one operating system is a native operating system or a guest operating system on a virtual machine, wherein the determining is based on checking a variable set during a boot process of the computer system (abstract, lines 1-3); said at least one operating system operating in a first manner if determined that it is a native operating system, wherein the native operating system works in a non-virtualized environment (col 1, lines 18-24); and said at least one operating system operating in a second manner if determined that it is a guest operating system on a virtual machine,

Art Unit: 2195

wherein the guest operating system operates in a virtual environment provided by the virtual machine (col 1, lines 24-32).

However Kishi teaches determining, by said computer system, whether said at least one operating system is a native operating system or a guest operating system on a virtual machine, wherein the determining is based on checking a variable set of the computer system (abstract, lines 1-3);

said at least one operating system operating in a first manner if determined that it is a native operating system, wherein the native operating system works in a non-virtualized environment (col 1, lines 18-24); and

said at least one operating system operating in a second manner if determined that it is a guest operating system on a virtual machine, wherein the guest operating system operates in a virtual environment provided by the virtual machine (col 1, lines 24-32).

Silvester and Kishi do not specifically disclose checking a variable set during a boot process of the computer system.

However Fish teaches checking a variable set during a boot process of the computer system (col 2, lines 64-67 through col 3, lines 1-5).

10. As per claim 12, Kishi teaches at least one operating system determining during runtime based on the variable whether the at least one operating system is being used as said native operating system or as said guest operating system on the virtual machine (abstract, lines 1-3).

11. As per claim 13, Kishi teaches said variable is a global variable (abstract, lines 1-3).
12. As per claim 14, Kishi teaches the first manner comprises said native operating system managing hardware resources of the computer system (col 3, lines 25-30).
13. As per claim 15, Kishi teaches wherein said second manner comprises said guest operating system having access to the computer system hardware resources that are managed by the Virtual Machine Monitor (col 3, lines 32-41; lines 57-60).
14. As per claim 17, Silvester teaches the invention substantially as claimed including a computer system:
 - at least one processor (figure 2, element 200);
 - an operating system executable on the least one processor to (col 4, lines 29-37):
 - determine whether said operating system is running as a different mode(mini mode) operating system or native(full mode) operating system (col 2, lines 22-33; col 4, lines 29-37);
 - Silvester do not specifically disclose a virtual machine monitor; determine whether said operating system is running as a virtualized operating system or native operating system, wherein the determining is based on checking variable set during a boot process of the computer system; and adapt operation of said operating system depending on whether it is running as the virtualized operating system or native operating system, wherein the native operating system manages hardware resources in a non-

virtualized environment without the VMM, and wherein the virtualized operating system manages hardware resources using the VMM.

However Kishi teaches a virtual machine monitor (col 3, line 22); and
determine whether said operating system is running as a virtualized operating system or native operating system, wherein the determining is based on checking variable set of the computer system (abstract, lines 1-3); and

adapt operation of said operating system depending on whether it is running as the virtualized operating system or native operating system, wherein the native operating system manages hardware resources in a non-virtualized environment without the VMM, and wherein the virtualized operating system manages hardware resources using the VMM (col 3, lines 25-41; lines 51-60).

Silvester and Kishi do not specifically disclose checking a variable set during a boot process of the computer system.

However Fish teaches checking a variable set during a boot process of the computer system (col 2, lines 64-67 through col 3, lines 1-5).

15. As per claim 18, it has similar limitations as of claim 13 above. Therefore it is rejected under the same rational.

16. As per claim 24, Kishi teaches said operating system performs the determining by executing an instruction which, when the operating system is being used as the virtualized operating system, cases the VMM to set at least one configuration bit to a first value (col 2, lines 25-40; col 6, lines 15-28).

17. As per claim 25, Kishi teaches said operating system performs the determining by further determining whether said operating system is running as the virtualized operating system or native operating system based at least in part on a determined value of at least one configuration bit after execution of said instruction (abstract, lines 1-3; col 1, lines 38-43; col 6, lines 15-28).

18. As per claim 27, it is a system claim of claim 17 above. Therefore, it is rejected under the same rational as claim 17 above.

19. As per claims 29, it has similar limitations as of claim 14 above. Therefore it is rejected under the same rational as of claim 14 above.

20. As per claim 30, Kishi teaches said second manner comprises acting as virtualized operating system (col 1, lines 24-32).

21. As per claim 35, it has similar limitations as of claim 17 above. Therefore it is rejected under the same rational as claim 17 above.

22. As per claim 36, Fish teaches determining means makes the determination during runtime of the system (col 2, lines 64-67 through col 3, lines 1-5).

23. As per claim 40, Kishi teaches wherein if determined that said flexible operating system is being used as the native operating system, said flexible operating system act4ng-is configured to act in a first manner, and if determined that said flexible operating system is being used as the virtualized operating system, said flexible operating system av-t4ng-is configured to act in a second manner (col 1, lines 20-35; col 2, lines 25-35).

24. As per claim 42, Kishi teaches the virtualized operating system is configured to manage hardware resources of the system by using the VMM, and where the native operating system is configured to manage the hardware resources in non-virtualized environment without using the VMM (col 3, lines 25-41; lines 51-60).

25. As per claim 43, it has similar limitations as of claims 42 above. Therefore it is rejected under the same rational as of claim 42 above.

26. As per claim 44, Fish teaches wherein the at least one processor is configured to selectively set the variable to one of plural values during the boot process, a first of the plural values to indicate that the flexible operating system is to be used as the native operating system, and a second of the plural values to indicate that the flexible operating system is to be used as the virtual operating system, wherein the flexible operating system is executed to check the variable during runtime after the boot process (abstract; col 2, lines 64-67 through col 3, lines 1-12).

Art Unit: 2195

Fish does not specifically disclose a flexible operating system being able to run in different mode.

However Silvester teaches a flexible operating system being able to run in different mode (col 4, lines 29-37).

27. As per claims 45-47, they have similar limitations as of claim 44 above. Therefore they are rejected under the same rationale as of claim 44 above.

28. Claim 3-4, 8, 16, 19-20, 22, 31, 33, 37, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silvester(Silvester) US Patent No. 7010634, in view of Kishi (Kishi) US Patent No. 5023771 and in view of Fish(Fish) US Patent No. 6199159, as applied to claims 1, 11, 17, 27 and 35, in view of Bennett et al. (Bennett) US Patent Publication No. 2004/011732.

29. As per claim 3, Kishi teaches that said flexible operating system executing in said second manner comprises said operating system acting as a virtualized operating system (col 2, lines 25-35).

Kishi, Silvester and Fish do not specifically disclose said operating system acting as a paravirtualized operating system.

However Bennett teaches that said operating system acting as a paravirtualized operating system (par. 0021).

Art Unit: 2195

30. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Bennett into the combined method of Kishi, Silvester and Fish to have the virtualized operating system acting as paravirtualized operating system. The modification would have been obvious because one of the ordinary skills of the art would utilize the teaches Bennett to have the virtualized operating system acting as paravirtualized operating system as the paravirtualized operating system can handle the privileged instructions more efficiently.

31. As per claim 4, Bennett teaches that paravirtualized operating system is operable to make a call to a Virtual Machine Monitor (VMM) for performing at least one privileged operation (par 0020, lines 1-6).

32. As per claim 8, Bennett teaches make a call to a Virtual Machine Monitor (VMM) for performing at least one privileged operation when the flexible operating system us executed in the second manner as the virtualized operating system (par. 0020, lines 3-5).

33. As per claim 16, Bennett teaches wherein said guest operating system makes, for at least one privileged operation a call to the VMM (par 0020, lines 1-6).

34. As per claim 19, Bennett teaches operating system is executable to check said value of said global variable before performing certain privileged operations (par. 0021).

Art Unit: 2195

35. As per claim 20, Bennett teaches that operating system is executed to perform the determining by determining, before execution of certain privileged instructions, whether said operating system is running as the virtualized operating system or native operating system (par. 0020).

36. As per claim 22, Bennett teaches when running as the virtualized operating system executes privileged instructions by making at least one call to the VMM (par 0020, lines 1-6).

37. As per claim 33, Bennett teaches at least one flexible operating system adapts is configured to adapt its operation to make a call to said VMM for performance of at least one privileged instruction when said at least one flexible operating system determines that said flexible operating system is running in the virtualized environment (par 0020, lines 1-6).

38. As per claim 37, Bennett teaches that means for virtualizing resources of said system and multiplexing said resources among one or more virtualized operating systems (par. 0019).

39. As per claim 39, Bennett teaches that if determined that said flexible operating system is being used as the virtualized operating system, said flexible operating system is configured to act as the virtualized operating system (par. 0032, lines 1-4; par. 0033, lines 1-4).

40. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silvester(Silvester) US Patent No. 7010634, in view of Kishi (Kishi) US Patent No. 5023771 and in view of Fish(Fish) US Patent No. 6199159, as applied to claims 1, 11, 17, 27 and 35, in view of Bennett et al. (Bennett) US Patent Publication No. 2004/011732, and further in view of Waldspurger et al.(Waldspurger) US Patent No. 6725289.

41. As per claim 9, Bennett teaches making the call to said VMM (par. 0020, 1-6; par 0027).

Bennett, Silvester, Fish and Kishi do not specifically disclose VMM uses an Application Program Interface (API) defined for said VMM.

However, Waldspurger teaches VMM uses an Application Program Interface (API) defined for said VMM (col 10, lines 24-45)

42. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Waldspurger into the combined method of Bennett, Fish, Silvester and Kishi to use application program interface to call VMM. The modification would have been obvious because one of the ordinary skills of the art would implemented any well known software communication architecture to communicate between guest and VMM which includes using Application Program Interface as a method of communication between application.

Allowable Subject Matter

43. Claims 5-6 are allowed.

Response to Arguments

44. Applicant's arguments with respect to claim(s) have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABDULLAH AL KAWSAR whose telephone number is (571)270-3169. The examiner can normally be reached on 7:30am to 5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng Ai T. An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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